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Prof. Otis T. Mason then read a paper on THE DEFINITION OF ANTHROPOLOGY AND ITS SUB-DIVISIONS.¹

A running discussion followed upon the various terms adapted to the classification of the phenomena of anthropology.

FORTY-EIGHTH REGULAR MEETING, December 20, 1881.

Mr. Lester F. Ward read a paper entitled THE ANTHROPOCENTRIC THEORY.² The following is an abstract :

The aim of the paper was to bring together into something like logical order a few of the more salient facts which have been cited in favor of and against the belief in the existence of a beneficent agency in nature, more especially as operating in the direction of the welfare and advantage of man, considered as the end toward which the various processes of the universe have tended. These statements of fact were accompanied by such explanations, qualifications, and other comments as seemed necessary to secure their proper appreciation and their true bearing upon the problem.

The speaker called attention to the fact that writers of a teleological bias are continually advancing what they regard as proofs of intelligent design and benevolent provision in behalf of sentient beings, especially man. Until within quite a recent period all philosophy was strictly *anthropocentric*, and the lower grades of creatures capable of enjoyment and suffering were wholly ignored ; but in later times a few of this school have expanded their scheme to embrace the animal world in general, rendering it *zoöcentric* instead of anthropocentric, although the existence of large orders of purely predatory creatures had proved a somewhat discouraging fact for their philosophy to assimilate.

Most of the examples that have been brought forward as establishing the operation of a designing intelligence and beneficent

¹ "American Naturalist," Vol. XVI., (January, 1882,) pp. 66-67.

² This paper will form part of Chapter VIII of the author's work "Dynamic Sociology," in press.

intent in the universe—optimistic facts, so called—can be classed under two general heads: They are either, 1, cases of natural or genetic adaptation; or, 2, they are mere coincidences.

Still a third class was, however, named in which the advantage is more apparent than real and becomes greatly reduced or disappears altogether on closer examination.

Under the first of these groups the following instances were enumerated:

1. A modern scientific writer had stated that in the case of the maternal instinct it was a mere accident that the course of action which the instinct prompts should be one that was conducive to the welfare of the offspring.

Against this view it was urged that this apparently fortuitous adaptation was clearly a genetic one and had been developed under the operation of the selective laws now generally recognized in biology.

2. The alleged excess of male over female births, supposed to be brought about for the purpose of supplying the loss of males incident to war and their more exposed mode of life, was questioned as a fact; the loss of males by violence being, probably, nearly compensated for by the greater delicacy of maternal functions; yet, if the supposed excess were proved, it might do no more than show that it was an advantage that it be so, which, on adaptation principles, would amount to accounting for the fact.

3. That the specific gravity of aquatic animals should almost exactly equal that of their medium was held to be a clear case of natural adaptation.

4. The allied fact that the bones of birds are hollow and communicate with the outer air was explained in the same manner.

5. The existence of the coal measures was cited as a favorite theme of optimists, and it was shown that it partook of the character partly of the first and partly of the second group. If it be true, as generally believed, that the process of their deposition had the effect to purify the atmosphere of its alleged excess of carbonic acid gas, then the fact must have constituted one of the conditions

to the development of higher forms of life, including human life, and as such it performs the office of an *efficient* and not a *final* cause. Since the close of the sixteenth century, when coal began to come into general use as fuel, it may have also produced a new effect upon the development of the race by greatly enhancing their comfort and consequent efficiency for action. In so far the correlation between the existence of the coal measures and the advancement of man has a causal relation and constitutes a case of adaptation ; in any other sense it must be regarded as a pure coincidence.

6. Very similar to this case is that of the late appearance, geologically speaking, of the most important economic families of plants, and particularly the *Rosaceæ* and *Gramineæ*. These plants were shown to have been, equally with the coal measures, a condition to the existence of the higher forms of animal life which have been genetically adapted to them. Considered from any other point of view the co-existence is purely accidental.

Under the second group, or that of pure coincidences, the following cases were noted :

1. The alleged advantage to man of the spheroidal form of the earth in preventing irregularities in its motions, due to mountains and other inequalities of its surface, which the equatorial *meniscus* neutralizes. This, Kant, who first suggested it, proposed to explain on teleological principles, and he rebukes the attempt to explain it as due to the equilibrium necessarily produced by the formerly fluid mass of the rotating planet. But as the mechanical explanation is complete without the teleological one, and will apply to any case, even where it might be a disadvantage, the latter is at least unnecessary.

2. The fact that there is no relation of dependence between the dispersive and refractive powers of different substances, and which alone renders the construction of the achromatic lens possible. This was mentioned as a most fortunate case under the present head ; but it was questioned whether this were not rather to have been

pected than the contrary, and whether admiration be really the proper attitude to maintain towards it.

3. It had been remarked by Brinkley "that if the velocity of light had been much less than it is astronomy would have been all but an impossible science." If it had been greater than it is, however, astronomical observation would have been in the same degree facilitated; and there was the same antecedent probability that it would be greater as less.

4. As a final case under this head was noted the circumstance that if the manufacture of alcohol had been so simple a process that the lowest races could have at all times obtained an unlimited amount of it, this would probably have effectually prevented the social development of the race, if it did not entirely extinguish it. It is a fortunate coincidence, therefore, that its production is only possible by races that have advanced far enough intellectually to be capable of foreseeing to some extent its evil effects and of exercising a certain control over their appetite for it.

Passing to the third group, or those instances in which the advantage is more apparent than real, only a single case was adduced as a type of the class.

This was the fact, so strenuously insisted upon by certain physicists, and notably Count Rumford, as a wise provision of nature in the interest of man, that water attains its greatest density at about $39\frac{1}{2}^{\circ}$ Fahrenheit, instead of at the actual freezing point. This view was based upon the supposition that if it were otherwise all bodies of water, even the ocean, would be frozen solid as often as the temperature fell to 32° . The fallacy of this reasoning has long been exposed, and it has been shown: first, that this property does not apply to the salt water of the ocean, which is about in the state from which the worst results of the theory would occur; second, that these results do not occur there, and would not in any liquid, but rather the opposite ones, viz., that bodies of water would never freeze over in temperate climates at all, since the superincumbent

mass of the water would prevent the cold from penetrating to the bottom, where alone congelation could take place if ice were heavier instead of lighter than water; and, third, that instead of water having been singled out as the only substance to be endowed with this property, it is now found that many others possess it, such as glass, bismuth, antimony, and even iron; so that independently of design the chances that water should possess it are about the same as that it should not, while the property itself is really of very doubtful advantage.

Upon an enumeration, therefore, of such cases only as seem to favor the anthropocentric theory it was maintained that the claim was a weak one. Unless the theory of adaptation is wholly rejected, the greater part of the illustrations fall under that head. A large share of the remainder are such as would be as likely to occur in the manner that they do, as otherwise, under the operation of the mathematical law of probabilities. The number of coincidences that can be noted is not greater than ought to be expected, or than are met with in other departments of human experience, while a few cases turn out, when fully understood, to be of doubtful advantage.

The speaker next proceeded to enumerate cases of the opposite general class, or such as seemed opposed to the doctrine of a special beneficent agency in the interest of man. This, he stated, was a much easier task than the preceding, which is itself a strong presumption against the optimistic view.

The illustrations adduced were grouped under three general heads, viz., 1, such as exhibit a condition generally unfavorable to life on the globe, either of men, animals, or plants—*anti-biocentric facts*;—2, such as negative, in one form or another, the assumption that the human race has been the special object of benevolent design—*anti-anthropocentric facts*;—and, 3, those in consequence of which social progress tends to defeat itself—*anti-sociocentric facts*.

A bare enumeration of the many cases cited is all that can be given in this abstract.

Under the first of those groups the following facts were set down :

1. That the longitudinal cohesion of the outer bark of many trees restricts their natural growth by binding the trunk too tightly and compressing the cells of the cambium layer. So obvious is this that horticulturists successfully relieve them by artificially slitting the bark.

2. That many plants bloom during a period of mild weather in autumn or winter, when there is no possibility that their fruit can reach maturity.

3. That the sting of many insects is so strongly barbed that it cannot be withdrawn from the body stung, but instead is extracted from that of the insect along with the viscera to which it is attached, resulting in the death of the latter. As only females are provided with stings the destruction of so many of that sex must be a disadvantage to the species.

4. That female opossums having only thirteen teats have been known to give birth to fifteen or sixteen young, and, as the continued life of each embryo depends upon its permanent attachment to a teat, the excess over the number of the latter must necessarily perish.

5. That moths, beetles, ephemerae, and other insects possess a suicidal propensity to fly into a flame.

6. That birds and animals on newly discovered islands have no innate fear of man, and allow themselves to be readily caught, so that they are soon exterminated.

7. That animals attacked with rabies immediately acquire a disposition to bite others, whereby the deadly malady is multiplied.

8. That many imperfectly integrated annelids labor under a great disadvantage from being obliged to support a multitude of similar organs in different somites.

While none of the above facts are capable of a teleological, or optimistic explanation, it was shown in each case that from the point of view of evolution they may all be readily accounted for.

Under the second, or anthropocentric group proper, the following facts were co-ordinated :

Three cases, under the general head of "rudimentary organs," as they are called, which, while they perform no known functions, are at the same time the seats of dangerous diseases, viz. :

1. The tonsils, as the seat of tonsillitis.
2. The thyroid gland, the seat of the disease called goître, or bronchocele.
3. The vermiform appendage of the intestines, in which two dangerous forms of disease are located.

Each of these has been traced back to a form in the lower animals, in which it was an active organ, which not only accounts for the existing vestige on true scientific grounds, but at the same time argues the descent of man from them. Yet this fails to relieve the optimist from the onus of proving a teleological advantage from them as they now exist.

4. Allied to these cases, but of less general renown, is that of the exposed condition of the lower extremity of the spinal cord, which, under certain circumstances, becomes the seat of a fatal malady known as rachidian meningitis. This condition, which is peculiar to man, is explained morphologically as a result of the assumption by man of the erect posture, in separating the sacral vertebræ and exposing the spinal cord.

The remaining cases cited under this head were taken from widely different fields :

5. That the ability to predict the weather is at once the most practically important and the most limited of scientific achievements.

6. That, as Laplace has shown, the elements of the solar system, from the human point of view, fall far short of the optimum.

7. That if, as many astronomers suppose, the moons of the larger planets are inhabited and derive their light and heat chiefly from their primaries, it is an ill-devised arrangement that in all cases they should always present one and the same side to them, leaving the other hemisphere in perpetual darkness.

8. That it would be much better for man if there could be about sixteen hours day to eight of night, corresponding to the normal requirements of activity and rest, and saving an average of four waking hours in darkness, with the accompanying cost of artificial illumination.

9. The misfortune was dwelt upon that all races should have been condemned to the use of either the quinary, decimal, or vigesimal system of notation, when either nine, twelve, or sixteen, but especially eight, would have constituted a basis so much superior in point of practical value. Genetically, it is easily explained as the result of man's possession of twenty digits.

10. That the human body should possess a specific gravity a trifle greater than that of water, coupled with the fact that man is not endowed with a natural instinct to swim; and this on a planet of whose superficial area two and four-fifths times as much is water as land, and which he is obliged to traverse in all directions. His supposed descent from purely terrestrial, or even partially arboreal anthropoid apes, would be a satisfactory genetic explanation of both these circumstances; but its admission would be no relief to the optimist from explaining them teleologically.

11. The brevity of human life was cited as an important barrier to intellectual progress. So large a portion of every one's lifetime is required to prepare for any useful work that little time is left for its accomplishment, and many are deterred from undertaking anything of real value. This, it was maintained, might as well have been otherwise, as there is nothing necessarily impossible in the limit of human life being two hundred years any more than in its being one hundred.

12. Living beings are so constituted that they multiply many times, often many hundred times, faster than their conditions would permit if the excess were not constantly kept down by the friction of the environment manifesting itself in a variety of ways. In the case of men, who form no exception to this law, disease, accident, violence, war, pestilence, and famine are among the

scourges that perform this office, the true cosmical nature of which is masked by our familiarity with the phenomena. The amount of suffering that would be saved if, instead of this method, that of diminished fertility or the destruction of unborn germs of life were adopted, is incalculable.

To these cases were added the following wholly disconnected but none the less apposite facts :

13. That the worst of all living enemies of mankind are too minute to be discovered by the highest-powered microscopes—the germs of disease.

14. That in temperate latitudes, where the bulk of the world's population occurs, northerly winds predominate in winter and southerly in summer, thus exaggerating the extremes of heat and cold.

15. That in mountainous regions the rainfall is chiefly on the tops of the mountains where it is not needed, leaving the otherwise fertile valleys and plains arid and parched.

16. That the most useful as well as the most beautiful objects in nature are usually the most rare.

17. That, whereas pleasures are usually moderate and brief, pains are often intense and protracted.

Under the last of the three general classes of anti-optimistic facts specified above, viz., the anti-sociocentric, or anti-progressive group, it was shown :

1. That social progress is rhythmical, and that its alternate flows and ebbs occasion incalculable waste, from the circumstance that only a part of what is gained by the flood-tide is retained after the ebb-tide is over.

2. That the study of phenomena has always had to be commenced from the top, and that the superficial view must be taken before the fundamental view can be gained ; so that the work of intellectual progress has consisted in the removal, not merely of ignorance, but of error.

3. That moral and social science, the most practically important

branches of knowledge, labor under difficulties from which all other sciences are exempt, since every attempt to analyze the phenomena of human action and social life into their simpler elements—a process essential to the study of any science—conflicts with received opinions and shocks a morbid sense which claims a preternatural character for the human race.

4. That the labor performed in the interest of social progress is unremunerative, and must usually be performed in the face of strenuous opposition ; which is alone sufficient to deter most men, however capable, from undertaking it.

5. That true merit is generally content to remain in obscurity, while the volatile elements of society thrust themselves into undue prominence and exert a greatly disproportionate influence.

6. That the mass of mankind wholly misconceive their own interests, and are generally found siding with the party that seeks to despoil them of their most valuable rights and liberties.

7. That the past tendency of the human intellect has been to ignore realities and waste its energies on empty speculations about transcendental questions.

8. That, while men have always had the most need, they have, at the same time, manifested the least disposition to exercise their intellectual faculties.

9. That in the present state of scientific progress the discovery of truth is rapidly distancing popular intelligence, so that it is impossible to assimilate the knowledge brought forth.

And finally :

10. That each and all of the many errors which the increasing intelligence of the world has successively swept away, have been defended to the last by at least a few of the most honored minds of the age, and have at last been compelled tardily to succumb to a sort of popular verdict, or to the combined force of the lesser lights and younger heads, reluctantly declining to follow longer those to whom they had been accustomed to look to for counsel and intellectual guidance.

In conclusion the speaker remarked that there were some to whom an apology might be due for so protracted an enumeration of the pro's and con's of optimism—a philosophy which may be supposed to have long been obsolete. To such, however, he could only express his regret that the mass of mankind have by no means reached their advanced position. While optimism, as a philosophic tenet, defined by the scholars of a century ago, has, it must be admitted, ceased to engross the attention of thinking minds, the qualified form of it which constitutes the anthropocentric theory, and toward which the foregoing considerations have been principally directed, still forms the very warp of the current philosophy outside of the domain of science, and to a great extent within that domain. It is the essence of all teleological conceptions, and so generally pervades the prevalent views of life and action, as to distort completely the popular conception of the relations between man and the universe. The great mass of men still believe in a conscious intelligence, either without or within the universe, which is perpetually adjusting means to ends in nature. The majority regard that intelligence as in a manner benign and sympathetic, and while shutting their eyes to such facts as have been here set forth, are ever on the alert to gather evidence, however slender, in support of providential interference and intelligent design.

Mr. S. D. Hinman then read a paper entitled *THE RABBIT AND THE SPRING.—A DAKOTAN TALE.*

Upon this paper Prof. Mason remarked that nearly the same story occurs in "Uncle Remus." He said it was possible that the negroes of the South might have learned it from the Southern Indians. He had formerly reasoned that the selection by the negroes of the rabbit as the hero of so many of their stories was because they thought that timid animal best typified their own helpless condition, from which a belief widely prevailed that they were yet to emerge victorious over all the influences that tended to hold them down.

Mr. Gilbert inquired whether the story was regarded as a myth, or whether it belonged to the proper folk-lore of the tribe.

Mr. Hinman thought that it was not believed in as a fact.

FORTY-NINTH REGULAR MEETING, January 3, 1882.

Dr. Robert Fletcher read a paper entitled *PAUL BROCA ; HIS LIFE AND WORK IN ANTHROPOLOGY*.¹

Dr. Antisell inquired whether the report was true that Paul Broca died of internal aneurism.

Dr. Fletcher replied that this was not developed by the autopsy and was a mere supposition.

Prof. Mason spoke of a letter he had once received from Broca, in which he advised American anthropologists to confine their investigations to their own country as the most promising field of research.

Dr. Antisell remarked that Broca was the first to observe the perforated skulls.

Dr. Fletcher said that he had treated this subject specially in a paper read at a previous meeting, which accounted for his touching so lightly upon it in the present one.

Prof. Mason asked whether it could be considered as the established opinion that the faculty of speech is located in the third frontal convolution of the brain. He said that he had heard both Dr. Otis and Dr. Woodward speak very skeptically about it, and cite a case in which this lobe was carried away entirely, and the man talked more than before.

Dr. Fletcher replied that there was some conflicting evidence on the subject, but that the doctrine had recently gained ground. He

¹“Paul Broca and the French School of Anthropology;” in “The Saturday Lectures,” delivered in the Lecture Room of the U. S. National Museum under the auspices of the Anthropological and Biological Societies of Washington, in March and April, 1882; Boston, D. Lothrop & Co., 1882; Washington, Judd & Detweiler, 1882, pp. 113-142; also separate, as Saturday Lecture No. 6.